

AMENDMENTS TO THE CLAIMS:

This listing of the claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) An apparatus for ~~handling communication signals mapping signals between virtual tributaries and digital signal formats for transmission to and from customer instruments and a telecommunications system along optical and wire paths,~~ comprising the combination of:

optical interface means for receiving optical signals, converting said optical signals into electrical signals and ~~demultiplexing~~demultiplexing said electrical signals from an optical channel format to a synchronous transport signal, STS, format;

STS multiplexing means for receiving the demultiplexed STS signals and generating an output of parallel STS signals arranged in at least one virtual tributary group, VTG, comprising a selected number of virtual tributaries;

digital interface means for receiving digital signals from and transmitting digital signals to wire paths coupled to the telecommunications system and customer instruments;

VTG circuit means for mapping and demapping a virtual tributary group and configured to perform at least one mapping operation from a group of operations consisting of mapping at least one of said virtual tributaries to at least one of said digital signals, mapping at least one of said virtual tributaries to a different one of said virtual tributaries, and mapping at least one of said digital signals to at least one of said virtual tributaries; and

channel unit means for receiving and processing said virtual tributary group and for delivering said virtual tributary group to predetermined customer instruments; and

_____ a common equipment device and a channel device connected by an optical communication link;

_____ wherein said optical interface means, said STS multiplexing means, and said VTG circuit means operate in said common equipment device, and said channel unit means operates in said channel device.

2. (Original) An apparatus according to claim 1, wherein said STS multiplexing means comprises means for sending loop-back signals for diagnosing faults in said optical interface means and said VTG circuit means.

3. (Currently Amended) ~~An apparatus according to claim 1, wherein said VTG circuit means comprises:~~

_____ An apparatus for handling communication signals comprising the combination of:

_____ optical interface means for receiving optical signals, converting said optical signals into electrical signals and demultiplexing said electrical signals from an optical channel format to a synchronous transport signal, STS, format;

_____ STS multiplexing means for receiving the demultiplexed STS signals and generating an output of parallel STS signals arranged in at least one virtual tributary group, VTG;

_____ VTG circuit means for mapping and demapping a virtual tributary group;

_____ channel unit means for receiving and processing said virtual tributary group and for delivering said virtual tributary group to predetermined customer instruments;

line interface circuit means comprising an input and an output for receiving and transmitting DS1 data streams, respectively, said line interface circuit means being operable to perform line decoding and clock recovery on received DS1 data streams; and

VT mapper means coupled to said line interface circuit means for mapping data from the received DS1 data streams to a virtual tributary in one direction of signal flow, and for demapping asynchronous or byte-synchronous virtual tributaries to DS1 data streams for transmission by said line interface circuit means in the opposite direction of signal flow.

4. (Currently Amended) An apparatus according to claim 1, further comprising a local area network, a local area network interface for each of a plurality of devices comprising said optical interface means, said STS multiplexing means, and said VTG circuit means, and signal processor means having a local area network interface for communicating with each of said plurality of devices.

5. (Original) A VTG circuit for processing DS1 data streams and virtual tributary groups, and for interfacing with circuit means leading to channel units, the VTG circuit comprising the combination of:

line interface circuit means comprising an input and an output for receiving and transmitting DS1 data streams, respectively, said line interface circuit means being operable to perform line decoding and clock recovery on received DS1 data streams; and

virtual tributary mapper means coupled to said line interface circuit means for mapping data from the received DS1 data streams to virtual tributaries in one direction of signal flow, and to said circuit means leading to channel units for demapping asynchronous or byte-synchronous virtual tributaries therefrom to DS1 data streams for transmission by said line interface circuit means in the opposite direction of signal flow.

6. (Original) An apparatus for mapping signals between virtual tributaries and digital signal formats for transmission to and from subscriber equipment and a telecommunications system along optical and wire paths, comprising:

a first bus interface connected to said telecommunications system for receiving signals from and transmitting signals to an optical path in said telecommunications system which are formatted as synchronous transport signals comprising virtual tributaries;

a second bus interface connected to said subscriber equipment for receiving signals from and transmitting signals to an optical path interconnecting a first plurality of said subscriber equipment which are formatted as synchronous transport signals comprising virtual tributaries and overhead bytes.

a digital signal interface for receiving digital signals from and transmitting digital signals to wire paths coupled to said telecommunications system and a second plurality of said subscriber equipment; and

a mapper circuit connected to said first bus interface, said second bus interface and said digital signal interface, and configured to perform at least one mapping operation from a group of operations consisting of mapping at least one of said virtual tributaries to at least one of said digital signals, mapping at least one of said virtual tributaries to a different one of said virtual tributaries, and mapping at least one of said digital signals to at least one of said virtual tributaries.

7. (New) An apparatus according to claim 3, wherein said STS multiplexing means comprises means for sending loop-back signals for diagnosing faults in said optical interface means and said VTG circuit means.

8. (New) An apparatus according to claim 3, further comprising a local area network, a local area network interface for each of a plurality of devices comprising said optical interface means, said STS multiplexing means, and said VTG circuit means, and signal processor means having a local area network interface for communicating with each of said plurality of devices.